Claims

1.   A method to screen for nucleic acid molecules which show altered expression in an isolated first cell sample comprising comparing the gene expression profiles
5   between said first cell sample with a second reference cell sample wherein said first cell sample has been grown in the presence of the carbon source butyrate, or a related carbon source from which butyrate is derived, either directly or indirectly, and comparing said expression profile with the expression profile in said second reference cell sample which has not been grown in the presence of butyrate, or said
10   related carbon source.

2.   A method according to Claim 1 wherein said screen for nucleic acid molecules comprises the steps of:
     i)   providing
15   a)   a cell growth preparation comprising a first cell sample derived from at least one region of the colon; cell growth media; and a carbon source wherein said carbon source is butyrate; and
             b)   a cell growth preparation comprising a second cell sample derived from an equivalent region of the colon; cell growth media; and a
20   carbon source which is not butyrate;
     ii)   extracting nucleic acid from said first and second cell samples; and
     iii)   comparing the gene expression profile in said first cell sample with the gene expression profile in said second cell sample.

25   3.   A method according to Claim 1 or 2 wherein said first and second cell samples are derived from the ascending colon.

4.   A method according to Claim 1 or 2 wherein said first and second cell samples are derived from the transverse colon.

30

5.   A method according to Claim 1 or 2 wherein said first and second samples are derived from the descending colon.

6.   A method according to Claim 1 or 2 wherein said first and second
samples are derived from the sigmoid region of the colon.

5   7.   A method according to Claim 6 wherein said cell samples are derived
from the rectal region of the colon.

8.   A method according to any of Claims 1-7 wherein said first and
second cell samples comprise epithelial cells.

10

9.   A method according to any of Claims 1-8 wherein said carbon source
which is not butyrate is glucose.

10.   A method according to any of Claims 1-9 wherein said nucleic acid
15   molecule which shows altered expression is selected from the group as
represented by the nucleic acid sequences as shown in Table 1, or nucleic
acid molecules which hybridise to the sequences presented in Table 1.

11.   A method for the detection of at least one nucleic acid molecule
20   associated with the initiation and/or progression of colorectal cancer, in an
animal, comprising the steps of:
        i)   providing a biological sample comprising at least one cell to
                be tested;
        ii)   contacting said sample with a ligand which binds at least one
25   nucleic acid molecule as represented by the nucleic acid
                sequence selected from the group consisting of:
        a) a nucleic acid molecule as represented by the nucleic acid
                sequence as shown in Table 1;
        b) a nucleic acid molecule which hybridises to nucleic acid
30   molecules as defined in (a);
        c) a nucleic acid molecule that is degenerate because of the genetic
                code to the nucleic acid molecule represented in (a) and (b); and

iii)   detecting the presence of at least one nucleic acid molecule in said sample.

12.   A method according to Claim 11 wherein said colorectal cancer is adenocarcinoma.

13.   A method according to Claim 11 or 12 wherein said ligand is a nucleic acid molecule adapted to anneal to said nucleic acid molecule which is associated with colorectal cancer.

14.   A method according to Claim 13 wherein said method is a polymerase chain reaction method.

15.   A method for the detection of at least one polypeptide associated with the initiation and/or progression of colorectal cancer, in an animal, comprising the steps of:

i)   providing a biological sample comprising at least one cell to be tested;

ii)   contacting said sample with at least one ligand which ligand specifically binds at least one polypeptide encoded by a nucleic acid molecule as represented by the nucleic acid sequence as shown in Table 1, or a variant polypeptide comprising an amino acid sequence which varies by the addition, deletion or substitution of at least one amino acid residue; and

iii)   detecting the presence of at least one polypeptide in said sample.

16   A method according to any of Claims 11-15 wherein said animal is human.

17.   A method according to Claim 15 or 16 wherein said ligand is an antibody.

18.   A method according to Claim 17 wherein said antibody is a monoclonal antibody, or at least the effective binding part thereof.

19.   The use of at least one polypeptide, or variant sequence thereof, encoded by a nucleic acid molecule(s) as represented by the nucleic acid sequence as shown in Table 1, as a target for the screening of agents which modulate the activity of said polypeptide.

5

20.   A method to screen for agents which modulate the activity of at least one polypeptide encoded by a gene associated with the initiation and/or progression of colorectal cancer comprising the steps of:

    i)   forming a preparation comprising at least one polypeptide wherein
10   said polypeptide is encoded by a nucleic acid sequence as shown in Table 1, or a variant polypeptide comprising an amino acid sequence which varies by the addition, deletion or substitution of at least one amino acid residue of the amino acid sequence shown in Table 1 and at least one agent to be tested; and

15   ii)   determining the activity of said agent with respect to activity of said polypeptide.

21.   A method according to Claim 20 wherein said polypeptide is expressed by a cell wherein said cell is transformed or transfected with said nucleic acid molecule.

20

22.   A method according to Claim 21 wherein said nucleic acid molecule is part of a vector adapted for recombinant expression of said nucleic acid molecule.

23.   A method according to Claim 22 wherein said vector is provided with a
25   promoter which enables the expression of said nucleic acid molecule to be regulated.

24.   A method according to any of Claims 21-23 wherein said cell is derived from the colon.

30   25.   A method according to Claim 24 wherein said cell is an epithelial cell.

26. A method according to any of Claims 20-25 wherein said agent is an

antibody.

27.   A method according to Claim 26 wherein said antibody is a monoclonal antibody or modified monoclonal antibody, or at least the effective binding part

5   thereof.

28.   A method according to Claim 27 wherein said binding part is a Fab fragment.

29.   A method according to Claim 28 wherein said antibody is selected from the

10   group consisting of: F(ab')$_2$, Fab, Fv and Fd fragments; antibodies comprising CDR3 regions, and single chain antibody variable regions.

30.   A method according to Claim 26 wherein said antibody is a humanised.

15   31.   A method according to Claim 26 wherein said antibody is a chimeric antibody.

32.   A method according to any of Claims 20-25 wherein said agent is a polypeptide.

20

33.   A method according to any of Claims 20-25 wherein said agent is a peptide.

34.   A method according to any of Claims 20-25 wherein said agent is nucleic acid molecule.

25

35.   A method according to Claim 34 wherein said nucleic acid molecule is an aptamer.

36.   A method according to Claim 34 wherein said nucleic acid is an inhibitory

30   RNA molecule.

37.   A method according to Claim 36 wherein said inhibitory RNA is encoded by a transcription cassette comprising a nucleic acid molecule, or part thereof, selected from the group consisting of:

   i)   a nucleic acid molecule as represented by the nucleic acid sequence as shown in Table 1;

   ii)   a nucleic acid molecule which hybridises to the sequence in (i); or

   iii)   a nucleic acid molecule which is degenerate because of the genetic code to the sequences defined in (i) and (ii) above; wherein said cassette is adapted such that both sense and antisense nucleic acid molecules are transcribed from said cassette.

38.   A method according to Claim 37 wherein said cassette is provided with at least two promoters adapted to transcribe both sense and antisense strands of said nucleic acid molecule.

39.   A method according to Claim 37 wherein said cassette comprises a nucleic acid molecule wherein said molecule comprises a first part linked to a second part wherein said first and second parts are complementary over at least part of their sequence and further wherein transcription of said nucleic acid molecule produces an RNA molecule which forms a double stranded region by complementary base pairing of said first and second parts.

40.   A method according to Claim 34 wherein said nucleic acid molecule is an antisense nucleic acid molecule.

41.   An antibody, or effective binding part thereof, identified by the method according to any of Claims 26-31 for use as a pharmaceutical.

42.   A polypeptide identified by the method according to Claim 32 for use as a pharmaceutical.

43.   A peptide identified by the method according to Claim 33 for use as a

pharmaceutical.

44.   A nucleic acid molecule identified by the method according Claim 34 for use as a pharmaceutical.

5

45.   Use according to Claim 44 wherein said nucleic acid molecule is an aptamer.

46.   Use according to Claim 44 wherein said nucleic acid molecule is an inhibitory RNA.

10

47.   Use according to Claim 44 wherein said nucleic acid molecule is an antisense nucleic acid molecule.

48.   Use according to any of Claims 41-47 wherein said pharmaceutical further comprises a a diluent, carrier or excipient.

15

20

25

30